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a laser for directing light of a known wavelength at the first beam splitter, wherein the first beam splitter is adapted to direct a first beam of light into the back side of the semiconductor die which reflects a second beam of light back;

a second beam splitter for generating third and fourth beams of light in response to the second beam being a redirected; and  
a processor adapted for analyzing the third and fourth beams of light, including comparing a relational factor that is a function of the two beams of light with a reference and detecting therefrom a surface defect in the die.

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### Remarks

Favorable reconsideration of this application is requested in view of the following remarks. For the reasons set forth below, Applicant respectfully submits that the claimed invention is allowable over the cited references.

The Office Action dated December 5, 2001, indicated that claims 1-16 stand rejected under Section 112(1) as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention; claims 1-16 stand rejected under Section 112(2) as being indefinite; claims 1, 2, 7, and 9-15 stand rejected under Section 103(a) as being unpatentable over *Marx et al.* (U.S. Patent No. 5,880,838).

Claim 11 has been amended to improve grammar and to address the Section 112(2) rejection which indicated that claim 11 lacked antecedent basis. Applicant requests that the rejection be withdrawn.

Applicant respectfully traverses the Section 112(1) rejection and submits that the specification is sufficient to enable one skilled in the art to make and use the instant invention. The specification of the instant application enables the invention by explaining that an interference profile can be used, for example, in order to detect the defects of devices under test. An example of such teaching may be found at page 11, lines 10-14: "Using dual-differential detection as described above, a defect, depicted as 232 in FIG. 2, is detected by the defective surface generating an optical path time/wavelength differential that is different from the optical path time/wavelength differential profiled in connection with development of the reference from the reference

die.” Further, the instant application does not claim generating an interference profile. Subject matter that is not claimed is not subject to Section 112 disclosure requirements as supported by current case law. Zygo Corp. v. Wyko Corp., 79 F.3d 1563, 1567 (Fed. Cir. 1996) (“the parameters of a section 112 inquiry are set by the claims” and such “[u]nclaimed subject matter is not subject to the disclosure requirements of §112.”) (emphasis in original).

With respect to the Section 112(2) rejections, Applicant traverses. Regarding claims 1, 10, and 11, one basis for the Examiner’s rejection is that Applicant’s use of the term “adapted to” renders the claims indefinite. The terminology “adapted to” is accepted terminology in PTO practice in defining an element of the claimed invention in functional terms. *See* MPEP §2173.05(g). The use of “adapted to” is supported by case law as being proper terminology for defining attributes that a structural element possesses. In re Venezia, 530 F.2d 956, 189 U.S.P.Q. 149 (CCPA 1976) (“members adapted to be positioned”...serve to precisely define present structural attributes of interrelated component parts of the claimed assembly.”) In addition, the terminology rejected by the Examiner has become well accepted in PTO practice in connection with functional claiming in “means for” claims under 35 U.S.C. §112(6). *See* MPEP §218; *See, DeGraffenreid v. United States*, 20 Ct. Cl. 458, 16 U.S.P.Q.2d 1321 (Ct. Cl. 1990) (“force generating means adapted to provide...”). Further, a sampling of the U.S. Patent Office’s own database, from 1991 to 2001, indicates that the term “adapted” has been used in the claims of over 162,000 issued patents. Finally, it is well recognized in Patent Office practice that it is not inherently wrong to define some part of an invention in functional terms. *See* MPEP §2173.05(g) (“Functional language does not, in and of itself, render a claim improper.” *See, In re Swinehart*, 439 F.2d 210, 169 U.S.P.Q. 226 (CCPA 1971)). In view of the foregoing, the “adapted to” terminology is proper claim terminology and does not render the claimed invention indefinite.

With respect to the rejection of claims 1, 10, and 11 alleging that the said claims are indefinite as to how the first beam of light detects defects from the surface of the die, Applicant traverses. Applicant submits that Section 112 does not require the claims clearly disclose details of a specific embodiment that the Examiner would like to see claimed. Each of the subject claims teaches “comparing a relational factor that is a

function of the two beams of light with a reference and detecting therefrom a surface defect in the die.” Applicant invites the Examiner to further clarify his concerns.

With respect to the rejection of claims 1, 10, and 11 alleging that said claims are incomplete, Applicant respectfully traverses. Applicant submits that the claims of the instant application sufficiently disclose the instant invention. The Examiner would appear to be redefining Applicant’s invention by proposing such additions.

Applicant submits that a *prima facie* case of obviousness has not been presented, and the Section 103(a) rejection is respectfully traversed. The Office Action fails to present motivation in support of the modification of the cited ‘838 reference. Evidence has not been provided of any teaching or suggestion for using the ‘838 reference in connection with defect detection in a semiconductor die, as claimed in the instant invention, or for modifying the reference to achieve the claimed limitations. Recent case law indicates that evidence of motivation must be specifically identified and shown by some objective teaching in the prior art leading to the modification. “Our court has provided [that the] motivation to combine may be found explicitly or implicitly: 1) in the *prior art references* themselves; 2) in the knowledge of those of ordinary skill in the art that certain *references*, or disclosures in those references, are of special interest or importance in the field; or 3) from the nature of the problem to be solved, ‘leading inventors to look to *references* relating to possible solutions to that problem.’” Ruiz v. A.B. Chance Co., (Fed. Cir., December 6, 2000. The Office Action fails to indicate reasons why one skilled in the art would be motivated to modify the ‘838 reference, and does not provide any evidence of factual teachings, suggestions or incentives from the prior art that lead to the proposed modification. Applicant requests that the rejection be withdrawn.

Moreover, there is no correspondence between the elements in the claims of the instant invention and the prior art. As acknowledged in the Office Action on page 6, the ‘838 reference fails to teach, for example, defect detection and/or thinning of a semiconductor die. The proposed modification of the ‘838 reference does not provide any factual teaching of all of the claimed subject matter of the present invention. For example, independent claims 1, 10, and 11 are directed to subject matter that includes “comparing a relational factor that is a function of the two beams of light with a reference

and detecting therefrom a surface defect in the die.” Claim 2 is directed to subject matter that includes using a nondefective semiconductor die to obtain the reference used in claim 1. Claim 3 is directed to subject matter that includes comparing a relational factor that “is a function of a time differential, or intensity.” The rejection regarding defect detection makes no mention of these limitations and fails to present a *prima facie* case of obviousness. Applicant requests that the rejection be withdrawn.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is encouraged to contact the undersigned at (651) 686-6633.

Respectfully submitted,

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Claim Changes for 09/386,112

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Below please find the changes to claim 11.

11. (Amended) A system for detecting a defect in a semiconductor device that includes a semiconductor die having a circuit side and bulk silicon in [an] a back side opposite the circuit side, comprising:

- a first beam splitter adapted for optical manipulation relative to the back side of the semiconductor die;

- a laser for directing light of a known wavelength at the first beam splitter, wherein the first beam splitter [means] is adapted to direct a first beam of light into the back side of the semiconductor die which reflects a second beam of light back;

- a second beam splitter for generating third and fourth beams of light in response to the second beam being a redirected; and

- a processor adapted for analyzing the third and fourth beams of light, including comparing a relational factor that is a function of the two beams of light with a reference and detecting therefrom a surface defect in the die.